

REMARKS

The application has been amended to place it in condition for allowance at the time of the next Official Action.

Claims 3-7 and 9-17 were previously pending in the application. New claims 18-22 are added. Therefore, claims 3-7 and 9-22 are presented for consideration.

Claims 3-6, 9, 12 and 17 were rejected under 35 USC §103(a) as being unpatentable over MILEY et al. 6,171,451 in view of CHANG 5,916,642. That rejection is respectfully traversed.

As recognized in the Official Action, MILEY does not disclose encapsulating-fullerene or encapsulating-nanotube. Thus, MILEY does not disclose how fullerenes encapsulate a target ion.

By contrast, MILEY uses inertial electrostatic confinement (IEC) to produce fullerene from carbon-based gases having a high chemical reactivity. See column 4, lines 61-65. Thus, in MILEY, the end product is the fullerene.

Although CHANG discloses a nanotube encapsulating a material, nevertheless, there is no suggestion in CHANG on how to modify the device or method of MILEY to use the end product of MILEY (fullerene) to encapsulate a material.

Rather, any change beyond the final product of fullerene would change the principle of operation of MILEY from producing fullerene to using fullerenes to encapsulate a target ion.

Moreover, even if one were to consider the proposed combination of references in the first instance, the recited invention does not result.

Using an IEC vacuum chamber as in MILEY, it is not possible to encapsulate the target materials in fullerene. That is, the target materials would decompose in an IEC vacuum chamber. The IEC vacuum chamber is designed in an almost square shape and energies are concentrated to the center of the vacuum chamber so as to generate high energy. Such a device could not be modified to encapsulate fullerene as suggested in the Official Action.

Accordingly, it would not have been obvious to modify MILEY in view of CHANG to meet claim 3. Claim 6 includes a similar feature and the analysis above regarding claim 3 also applies to claim 6. The dependent claims are believed to be patentable at least for depending from an allowable independent claim.

Claims 7 and 13-16 were rejected under 35 USC §103(a) over MILEY et al. in view of CHANG and further in view of FETHERSTON et al. 5,693,376. That rejection is respectfully traversed.

FETHERSTON is only cited with respect to a magnetic field generation means. FETHERSTON does not overcome the shortcomings of MILEY and CHANG set forth above with respect to claim 6. Since claim 7 depends from claim 6 and further defines

the invention, claim 7 is believed to be patentable at least for depending from an allowable independent claim.

Claims 13-16 are directed to apparatuses for producing encapsulating-fullerene or encapsulating-nanotubes including means for generating the target ions to be encapsulated. The apparatuses also include a substrate having fullerene or nanotubes deposited thereon that encapsulates the target ions to produce encapsulating-fullerene or encapsulating-nanotubes.

As set forth above, MILEY does not produce nor could be modified in view of CHANG to produce encapsulating-fullerenes that encapsulate a target ion. Thus, MILEY in view of CHANG does not suggest an apparatus that produces encapsulating-fullerenes.

FETHERSTON does not overcome the shortcomings of MILEY and CHANG and thus, the proposed combination of references does not meet claims 13-16.

Claim 10 was rejected under 35 USC §103(a) over MILEY et al. in view of CHANG and further in view of TAKEHARA et al. US Publication No. 2005/0129607. That rejection is respectfully traversed.

TAKEHARA is only cited with respect to features of dependent claim 10. TAKEHARA does not overcome the shortcomings of MILEY and CHANG set forth above with respect to claim 6. Since claim 10 depends from claim 6 and further defines the invention, claim 10 is believed to be patentable at least for depending from an allowable independent claim.

Moreover, claim 10 requires that encapsulation target molecules are TTF, TDAE, TMTSF, pentacene, tetracene, anthracene, TCNQ, Alq₃, or F₄TCNQ. TAKEHARA discloses organic compounds as extractant, but does not disclose encapsulation of the above-noted organic compounds. Since the proposed combination of references does not suggest encapsulating the above target molecules, the proposed combination of references does not meet claim 10. Thus, claim 10 is believed to be patentable independently of the patentability of claim 6.

Further, as set forth above, in the IEC vacuum chamber (of MILEY), encapsulation of the target ions is not possible based on such ions being decomposed in an IEC chamber. Accordingly, the proposed combination of references does not meet claim 10.

Claim 11 was rejected under 35 USC §103(a) over MILEY et al. in view of CHANG and further in view of LIU et al. (Chemical Physics Letters, 331 (2000), pages 31-34). That rejection is respectfully traversed.

LIU is only cited with respect to features of dependent claim 11. LIU does not overcome the shortcomings of MILEY and CHANG set forth above with respect to claim 3. Since claim 11 depends from claim 3 and further defines the invention, claim 11 is believed to be patentable at least for depending from an allowable independent claim.

Moreover, LIU is related to growth of carbon nanotubes and does not suggest that the carbon nanotubes are collision ions that are used when encapsulating target ions, or that a diameter of the collision ion is 3.0 Å or larger. Thus, the proposed combination of references does not meet claim 11 and therefore, claim 11 is believed to be patentable independently of the patentability of claim 3.

New claims 18-22 are added. Support for the new claims can be found at least in the original claims.

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future submissions, to charge any deficiency or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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